FEDERAL-STATE
COOPERATIVE SNOW SURVEYS and
IRRIGATION WATER FORECASTS

FOR

MONTANA

APRIL 15, 1949

by
Montana Agricultural Experiment Station
and
Division of Irrigation, Soil Conservation Service
United States Department of Agriculture

in cooperation with

U.S. Forest Service....U.S. National Park Service....U.S. Bureau of Reclamation....U.S. Geological Survey and State Engineer of Montana

APRIL 15 SUMMARY
OF IRRIGATION WATER SUPPLY FOR MONTANA

Due to large accumulation of snow in the mountains as indicated in earlier reports of snow surveys, which equalled and in many places exceeded comparable dates in 1948, it was decided to make supplemental surveys on April 15, May 1, May 15 and possibly June 1, depending upon snow conditions subsequent to these dates. The following tabulation of data collected from our various cooperators for April 15, is presented for your information.

Without comparable data for April 15 of past years, forecast revisions were not attempted at this time. A comparison of per cent density of the snow pack has been displayed. It is evident that although there is an apparent loss of water content from April 1 to April 15, the present water content is higher than 1948 and the density of the snow is higher than 1948 as of April 1. The density of a snow pack always increases as the season progresses. This is a ripening process and the snow usually attains a density of about 45 to 50 per cent before melting becomes evident. The relatively high density of the present snow pack could well be an indication that runoff is ready to begin.

The snow melt season during April has been ideal with cold nights, warm days and a few storms that have brought a little precipitation to consolidate the snow pack. The absence of the usual January thaw or chinook in midwinter brought about an unpacked condition of the snow that lasted up into April. The high density of the pack, however, indicated that the snow was not all "Fluff." Without the midwinter thaw continued cold weather drove frost into the ground to considerable depths. The frost action heaved the soil, making it very porous and susceptible to receiving moisture. This perhaps explains the lack of a sudden rise in stream flow during the period when the large volume of snow was melting from the plains area during late March and more than likely is the reason for the lack of early runoff during the first weeks of April. These facts are brought out by ground water measurements made by the U.S. Geological Survey. These measurements indicate that in many basins the ground water has risen from two to five feet during the winter and early spring months. This ground water will tend to bolster up the late summer flow.

All data collected indicates an "EXCELLENT" supply of water for irrigation use this season. At the same time the possibility of extremely high peak flow still exists. In most basins there is more water in the snow this year than last year. The density is higher than last year which makes possible an early runoff season.

Reservoir storage is good for this time of year. The Montana Power Company Reservoirs are being lowered at present to make room for the above normal spring flow to follow shortly. This will materially help to provide some room for "Flood Control" operations.

Reservoirs that are as high or higher than last year at this date, and which do not have adequate spilway capacity, should be drawn down to a safe margin and plans should be made for per cent above normal flow as indicated in the April first bulletin.

MONTANA SNOW SURVEYS April 15 , 1949

COLUMBIA BASIN

DRAINAGE BASIN AND SNOW COURSE **	State	No.	Elev.	Date of Survey 1949	Snow Depth (In.) 1949	SNOW MEASUREMENTS Water Content (Inches) April 15 1949	Per cent Density	April 1, 1949 W.C.	April 1, 1949 Density	April 1, 1948 W.C.	April 1, 1948 Density
Kootenai River											
Baree Mt.	Montana	1	6000	4/15	113.9	51.0	44.8	55.2	42.1	40.6	36.0
Bluebird Basin	"	24	6800	4/14	95.2	37.7	39.6	38.2	34.8	36.8	36.4
Upper Clark Fork											
Storm Lake	Montana	11	7780	4/15	46.4	15.6	33.6	16.0	30.2	19.7	30.7
Slide Rock Mt.	"	8	7100	4/18	41.0	14.0	34.2	18.8	34.2	19.2	29.1
Stemple Pass	"	16	6900	4/15	37.0	11.1	30.0	13.5	21.0	10.3	23.4
Stuart Mt. #1	"	13	7400	4/18	52.9	22.2	42.2	23.4	35.2	37.5	40.3
Skalkaho Summit	"	7	7258	4/18	59.3	26.2	44.2	34.6	41.7	29.2	34.0
Bitterroot											
Packers Mdw.	Idaho		5700	4/18	54.3	29.9	55.3	34.4	40.3	24.3	36.4
Stuart Mt. #1	Montana	13	7400	4/18	52.9	22.2	42.2	23.4	35.2	37.5	40.3
Flathead											
Desert Mt.	Montana	3	5600	4/14	44.7	17.0	38.0	19.0	32.8	14.7	27.8
Hell Roaring Cr. Div.	"	6	5770	4/14	79.2	34.1	43.1	33.0	36.0	28.6	33.8
Benton Mdw.	Idaho		2344	4/12	65.0	29.4	44.3	32.8	40.0	22.5	37.0
Benton Springs	"		4900	4/11	1.0	0.0	----	4.1	31.6	1.5	25.0
Baree Mt.	Montana	1	6000	4/15	113.9	51.0	44.8	55.2	42.1	40.6	36.0
Freezeout	"	6	7000	4/13	92.1	39.6	43.0	37.6	33.6	33.9	30.6
Lookout	Idaho		5250	4/15	96.0	45.0	46.8	48.7	41.7	37.5	35.8
Nezperce Camp	Montana	4	5580	4/14	39.0	14.2	36.5	20.8	36.6	14.9	32.4
Nezperce Pass	Idaho		6575	4/14	47.0	19.1	40.6	23.8	34.6	23.6	35.2

MONTANA SNOW SURVEYS April 15 , 1949

MISSOURI BASIN

DRAINAGE BASIN AND SNOW COURSE **	State	No.	Elev.	Date of Survey 1949	Snow Depth (In.) 1949	SNOW MEASUREMENTS Water Content (Inches) April 15 1949	Per cent Density	April 1, 1949 W. C.	April 1, 1949 Density	April 1, 1948 W.C.	April 1, 1948 Density
Jefferson River											
Jahnke Creek	Montana	24	7340	4/14	35.6	12.2	34.4	14.4	31.6	9.1	25.3
Goldstone	"	22	8100	4/14	50.6	18.7	37.0	19.0	32.0	12.7	27.3
Terrell Creek	"	20	6650	4/14	9.8	4.0	40.8	6.0	23.5	3.5	23.2
Selway Junction	"	21	6800	4/14	27.4	9.2	33.7	12.0	30.5	6.8	23.9
Elk Horn	"	11	8450	4/15	32.6	11.1	34.1	13.6	32.5	9.4	24.6
Madison River											
Twenty-One Mile	Montana	6	7150	4/14	44.8	17.0	38.0	20.5	36.5	14.4	26.0
Gallatin River											
Twenty-One Mile	Montana	6	7150	4/14	44.8	17.0	38.0	20.5	36.5	14.4	26.0
Missouri Main Stem											
Kings Hill	Montana	25	7950	4/15	49.3	16.0	32.6	16.9	32.3	13.1	28.0
Stemple Pass	"	16	6900	4/15	37.0	11.1	30.0	13.5	21.0	10.3	23.4
Marias River											
Marias Pass	Montana	21	5250	4/15	45.6	17.6	38.6	21.4	34.1	18.9	27.6
Yellowstone River											
Canyon #2	Wyoming	2	7750	4/20	40.3	12.3	30.6	14.9	31.4	10.2	22.7
Lake	"	1	7850	4/20	33.8	11.7	34.7	15.2	32.2	11.5	25.9
Cook City	Montana	10	7400	4/20	28.7	8.8	30.6	10.6	27.3	10.1	26.6